

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Bahl et al.

Serial No.: TBA

Examiner: TBA

Filing Date: April 2, 2004

Group Art Unit: 0

Title: GALLIUM ARSENIDE ANTIMONIDE (GaAsSb)/ INDIUM PHOSPHIDE (InP) HETEROJUNCTION BIPOLAR TRANSISTOR (HBT) HAVING REDUCED TUNNELING PROBABILITY

COMMISSIONER FOR PATENTS
P.O. Box 1450
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INFORMATION DISCLOSURE STATEMENT

Sir:

This Information Disclosure Statement is submitted:

- (a) ☒ Under 37 CFR 1.97(b).
(Within three months of filing national application; or date of entry of national application; or before mailing date of first Office action on the merits; whichever occurs last).
- (b) ☐ Under 37 CFR 1.97(c) together with *either* a:
☐ Statement under CFR 1.97(e), or
☐ \$180.00 fee under 37 CFR 1.17(p).
(After the CFR 1.97(b) time period, but before a final action or notice of allowance, whichever occurs first).
- (c) ☐ Under 37 CFR 1.97(d) together with: a
Statement under 37 CFR 1.97(e), *and*
\$180.00 fee as set forth in 37 CFR 1.17(p).
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☐ STATEMENT UNDER 37 CFR 1.97(e)

The undersigned certifies that:

- ☐ Each item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the statement, or
- ☐ No item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, was known to any individual designated in 37 CFR § 1.56(c) more than three months prior to the filing of the Information Disclosure Statement.

☐ PRIOR APPLICATIONS

References identified with an asterisk (*) in the enclosed PTO Form 1449, were disclosed in prior Patent Application No. 0, filed , now U.S. Patent No. , and, as such, copies thereof are not included pursuant to the provisions of 37 CFR 1.98(d).

☐ FOREIGN LANGUAGE DOCUMENTS

A concise explanation of the relevance of foreign language patents, foreign language publications and other foreign language information listed on PTO form 1449, as presently understood by the individual(s) designated in 37 CFR 1.56(c) most knowledgeable about the content is given on the attached sheet, or where a foreign language patent is cited in a search report or other action by a foreign patent office in a counterpart foreign application, an English language version of the search report or action which indicates the degree of relevance found by the foreign office is listed on form PTO 1449 and is enclosed herewith.

☒ **FEE AUTHORIZATION**

Please charge to Deposit Account **50-1078** the sum of _____. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account **50-1078** pursuant to 37 CFR 1.25.

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Respectfully submitted,
NEEDLE & ROSENBERG, P.C.

By Michael J. Tempel

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Date: April 2, 2004

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Form PTO-1449 LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	ATTORNEY DOCKET NO. 10040093-1	SERIAL NO. TBA
	APPLICANT Bahl <i>et al.</i>	
	FILING DATE TBA	GROUP TBA

REFERENCE DESIGNATION
U.S. PATENT DOCUMENTS

EXAMINER INITIAL	*	DOCUMENT NUMBER	DATE	NAME

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	NAME	TRANSLATION YES	NO

OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, etc.)

AA	I. Vurgaftman, <i>et al.</i> , Band Parameters For III-V Compound Semiconductors and Their Alloys, <i>Journal of Applied Physics</i> , Vol. 89, No. 11, (2001) (5815-5875)
AB	N. Matine, <i>et al.</i> , Nearly Ideal InP/GaAsSb/InP Double Heterojunction Bipolar Transistors With Ballistically Launched Collector Electrons, <i>Electronics Letters</i> (1998), Vol. 34, No. 17 (1700-1702)
AC	M. Ida, <i>et al.</i> , InP/InGaAs DHBTs With 341-GHz f_T At High Current Density of Over 800 kA/cm ² , 2001 IEEE, (35.4.1 - 35.4.4)
AD	S.S. Yi, <i>et al.</i> , Growth and Device Performance of InP/GaAsSb HBTs, <i>2003 IEEE</i> , (380-384)
AE	C.R. Bolognesi, <i>et al.</i> , Breakdown Voltage Limitations, Impact Ionization, and Interband Tunneling in InP/GaAsSb/InP Type-II NpN DHBTs, <i>2003 IEEE</i> , (4 pages)
AF	S.P. McAlister, <i>et al.</i> , Improvement of f_T by Dipole Doping at the Collector Heterojunction in InP Double HBTs, <i>Electronics Letters</i> (1997), Vol. 33, No. 11 (991-993)

EXAMINER
DATE CONSIDERED

* Copies of these references are not enclosed Pursuant to 37 CFR 1.98(d). (See accompanying IDS)